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Criteria for choosing between Transmission SVCs and STATCOMs in Brazil

SC B4 – DC Systems and Power Electronics
PS 3-1, Question 3-1

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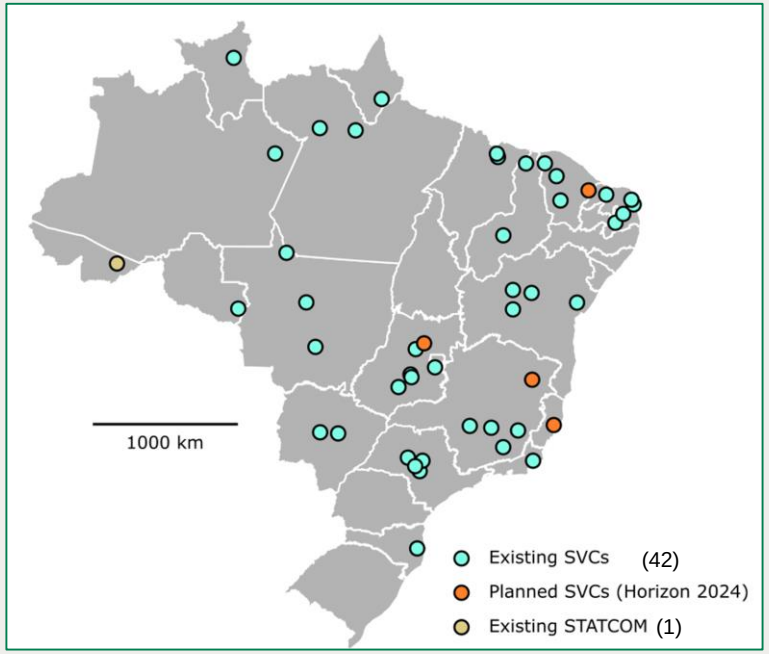
SVCs vs. STATCOMs in Brazil (1)

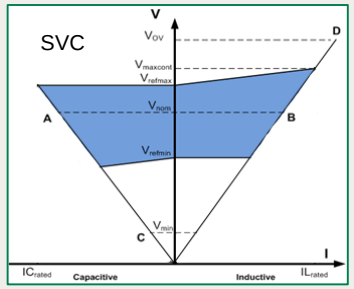
- The Brazilian Interconnected Power System (BIPS) is expanded based on transmission auctions and has 42 SVCs and only 1 STATCOM.

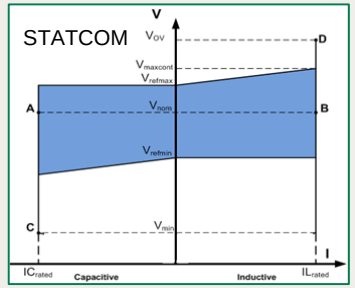
- These auctions have SVCs as a reference alternative. However, STATCOMs can be also offered if they fulfill all the technical requirements.
  - Auction technical documents are being adapted to allow fairer competition between SVCs and STATCOMs.
  - Reactive power support in Brazil is defined by the Expansion Planning Authority (EPE) and is studied for integration by the Brazilian System Operator (ONS).

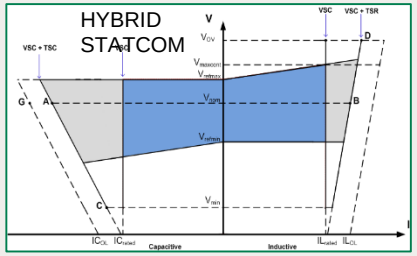
- *Investors have some reasons to support SVCs:*
  - Higher nationalization of SVC components when compared to STATCOM.
  - Good experience with SVCs in Brazil regarding component replacement, degraded modes, reliability indices, and performance.
  - Some issues with the only STATCOM in operation in Brazil.
  - Nowadays statistics about STATCOM performance only (RAM), in general, are scarce.
  - Bidders in Brazil don't want to take further risks regarding STATCOMs.

SVCs are the reference alternative









SVCs vs STATCOMs in Brazil (2)

- Auctions Technical Documents will accommodate both technologies in search of more competitiveness. Some suggestion points follow.

  – STATCOMs are also being analyzed to be a possible reference alternative in the same way SVCs are nowadays.

  – According to some manufacturers, for instance, a ±300 Mvar STATCOM may be competitive with a ±300Mvar SVC (2 TCRs +2 TSCs+ HFs, regular configuration in Brazilian transmission auctions).

  – Asymmetrical output ranges may not be the best cost-effective solution to reactive power compensation issues. This usually leads to SVC-based applications. Note that pure STATCOMs are inherently symmetrical.

  – Power loss requirements are met by both technologies.

  – RAM requirements are being carefully established for SVCs/STATCOMs (availability ≥ 99%, STATCOMs IGBT submodules redundancy ≥10%).

  – Low voltage ride-through capabilities are proposed to be differently specified for SVCs and STATCOMs.

  – The overvoltage inductive cycle is the same for both technologies.